WE CLAIM:

1. A method of controlling superheating of a compressed natural gas stream for transmission through a pipeline, the method comprising:

a. dividing a stream of natural gas discharged from a high pressure gas compressor (106) into a first portion (108) and a second portion (202);

b. passing the first portion (108) of the gas from the gas compressor to a heat exchanger (112) to heat the gas to a predetermined temperature;

c. passing the first portion of gas (111) exiting the heat exchanger to an aftercooler (114);

d. passing the second portion (202) of natural gas discharged from the gas compressor (106) to the aftercooler (114) without passing it through the heat exchanger (112), the second portion of gas and the first portion of gas being mixed at the aftercooler inlet and cooled by the aftercooler and discharged from the aftercooler as a cooled gas stream (116) having a temperature no greater than a first temperature;

e. passing the cooled gas stream (116) from the aftercooler to a liquid discharge drum (118) to remove condensate from the cooled gas and discharging from the drum a partially dried gas stream (120) at a second temperature;

f. passing the partially dried gas stream (120) from the discharge drum to the heat exchanger (112) in heat exchanging relation with the first portion of gas (108) from the gas compressor, and superheating at least a portion of the gas stream (120) to a third temperature to provide a superheated gas stream (129), the third temperature being controlled by an automated control loop responsive to a differential pressure across the gas compressor (106); and

g. passing the superheated gas stream (129) into a tie-line (256) and injecting a predetermined amount of an enhanced corrosion inhibitor formulation into the tie-line to mix with the superheated gas stream, where the amount of enhanced corrosion inhibitor injected is proportioned in response to the third temperature.

2. The method of claim 1, wherein the enhanced corrosion inhibitor formulation is a mixture of diesel oil and a conventional corrosion inhibitor, and wherein in step (g), the diesel oil is injected into the tie-line using a first pump and the corrosion inhibitor is injected into the tie-line using a second pump.

3. The method of claim 1, wherein in step (f), the automated control loop receives first and second input signals corresponding to the suction pressure of the gas compressor and the discharge pressure of the gas compressor, respectively, the control loop calculating the differential pressure in response to the first and second input signals.

4. The method of claim 3, wherein in step (f), the control loop receives a third input signal corresponding to the second temperature of the partially dried gas output from the discharge drum, the control loop controlling the third temperature in response to the second temperature and the value of the differential pressure across the gas compressor.

5. The method of claim 4, wherein in step (f), the control loop controls the third temperature by determining an amount of superheat to be added to the partially dried gas in the heat exchanger in order to raise the temperature of the gas from the second temperature to the third temperature.

6. The method of claim 5, wherein in step (f), after the control loop determines the amount of superheat, the control loop transmits a remote set point to a temperature controller of the heat exchanger.

7. The method of claim 1, wherein in step (f), the control loop transmits a remote set point to a temperature controller of the heat exchanger to control the third temperature.

8. The method of claim 1, wherein the heat exchanger is a shell and tube heat exchanger and the first portion of pressurized gas passes through the tubes of the heat exchanger.

9. The method of claim 1, wherein the third temperature is about 130°F.

10. The method of claim 1, wherein the amount of enhanced corrosion inhibitor added is sufficient to saturate the gas stream entering the pipeline at the third temperature.

11. A system for the controlled superheating of compressed natural gas for transmission through a pipeline, comprising:

a gas compressor for raising the pressure of the natural gas for transmission through the pipeline;

a heat exchanger;

a first path connecting said gas compressor to said heat exchanger, a first portion of pressurized gas flowing from said gas compressor to said heat exchanger through said first path;

an aftercooler;

a second path connecting said heat exchanger to said aftercooler, the first portion of heated gas flowing from said heat exchanger to said aftercooler through said second path;

a bypass connecting said gas compressor to said aftercooler, a second portion of the natural gas flowing from said gas compressor to said aftercooler through said bypass without passing through said heat exchanger, the second portion of gas and the first portion being mixed at said aftercooler and cooled by

said aftercooler to be output from the aftercooler as cooled gas having an output temperature no greater than a first temperature;

a discharge drum;

a third path connecting said aftercooler to said discharge drum, the cooled gas flowing from said aftercooler to said discharge drum through said third path, the cooled gas in said discharge drum having generated condensate removed therefrom to become partially dried gas at a second temperature;

a fourth path connecting said discharge drum to said heat exchanger, the partially dried gas flowing from said discharge drum to said heat exchanger through said fourth path, the partially dried gas being superheated to a third temperature in said heat exchanger to become superheated gas;

a control loop for controlling the third temperature in response to the differential pressure across said gas compressor;

a tie-line extending from said heat exchanger, the superheated gas flowing from said heat exchanger into said tie-line; and

pumping means for injecting a controlled amount of an enhanced corrosion inhibitor formulation into said tie-line for mixing with the superheated gas, where the amount of enhanced corrosion inhibitor formulation is controlled automatically in response to the third temperature.

12. The system of claim 11, wherein said control loop transmits a remote set point to a temperature controller associated with said heat exchanger to control the third temperature.

13. The system of claim 11, wherein the heat exchanger is a shell and tube heat exchanger.

14. The system of claim 11 which further comprises a fifth path connecting said discharge drum to the tie line, whereby a controlled portion of the partially dried gas bypasses the heat exchanger.

15. The system of claim 14, wherein the amount of any partially dried gas passing through the fifth path is controlled by the control loop in response to the second temperature.

16. The system of claim 15 which further comprises a temperature control valve for admitting partially dried gas to pass through said fifth path.